

## FLIGHT SUMMARY REPORT

**Flight Number:** 98-007-04  
**Calendar/Julian Date:** 30-31 July 1998 • 211-212  
**Sensor Package:** Dual Wild Heerbrugg RC-30  
**Area(s) Covered:** Tongass National Forest

**Investigator(s):** Ishikawa, USDA Forest Service

**Aircraft #:** 799  
Department of Energy  
Cessna Citation

### SENSOR DATA

<b>Accession #:</b>	05282	05283
<b>Sensor ID #:</b>	016	017
<b>Sensor Type:</b>	RC-30	RC-30
<b>Focal Length:</b>	6" 152.83 mm	6" 152.75 mm
<b>Film Type:</b>	Panatomic X Aerographic II, 2412	Aerochrome IR SO-060
<b>Filtration:</b>	Wratten 12 + 2.2 AV	Wratten 12 + 2.2 AV
<b>Spectral Band:</b>	510-700 nm	510-900 nm
<b>f Stop:</b>	4	4
<b>Film Speed:</b>	50	80
<b># of Frames:</b>	127	127
<b>% Overlap:</b>	60	60
<b>Quality:</b>	Excellent	Excellent
<b>Remarks:</b>	Add 7 seconds for correct UTC	

## **Airborne Science Program**

The Airborne Science Program is supported by two ER-2 high altitude Earth Resources Survey aircraft. These aircraft are operated at NASA's Dryden Flight Research Center, Edwards, California. The ER-2s are used as readily deployable high altitude sensor platforms to collect remote sensing and in situ data on earth resources, celestial phenomena, atmospheric dynamics, and oceanic processes. Additionally, these aircraft are used for electronic sensor research and development and satellite investigative support.

The ER-2s are flown from various deployment sites in support of scientific research sponsored by NASA and other federal, state, university, and industry investigators. Data are collected from deployment sites in Kansas, Texas, Virginia, Florida, and Alaska. Cooperative international scientific projects have deployed the aircraft to sites in Australia, Brazil, Chile, Great Britain, New Zealand and Norway.

Photographic and digital imaging sensors are flown aboard the ER-2s in support of research objectives defined by the sponsoring investigators. High resolution mapping cameras and digital multispectral imaging sensors are utilized in a variety of configurations in the ER-2s' four pressurized experiment compartments. The following provides a description of the cameras used for data collection during this flight.

## **U.S. Forest Service Remote Sensing Applications Center**

Photographic data was collected on this flight through a cooperative effort involving NASA-Ames Research Center, the U.S. Forest Service Remote Sensing Applications Center in Salt Lake City, Utah and the Department of Energy Remote Sensing Laboratory in Las Vegas, Nevada. The data were acquired by a Department of Energy Cessna Citation based in Las Vegas and deployed to Juneau, Alaska for purposes of acquiring color infrared and black and white mapping camera photography over the Tongass National Forest. Original photography from this flight will be archived at the Forest Service Remote Sensing Applications Center in Salt Lake City. Additional information regarding these data may be obtained from the Remote Sensing Applications Center, 2222 West 2300 South, Salt Lake City, UT 84119 (Telephone: 801-975 3663)

## **Camera Systems**

Various camera systems and films are used for photographic data collection. Film types include high definition color infrared, natural color, and black and white emulsions. Available photographic systems are as follows:

- Wild-Heerbrugg RC-10/RC30 metric mapping camera
  - 9 x 9 inch film format
  - 6 inch focal length lens provides area coverage of 16 x 16 nautical miles from 65,000 feet
  - 12 inch focal length lens provides area coverage of 8 x 8 nautical miles from 65,000 feet
- Hycon HR-732 large scale mapping camera
  - 9 x 18 inch film format
  - 24 inch focal length lens provides area coverage of 4 x 8 nautical miles from 65,000 feet

- IRIS II Panoramic camera
  - 4.5 x 34.7 inch film format
  - 24 inch focal length lens
  - 90 degree field of view provides area coverage of 2 x 21.4 nautical miles from 65,000 feet

### **Data Availability**

The U.S. Geological Survey's EROS Data Center at Sioux Falls, South Dakota serves as the archive and product distribution facility for Airborne Science Program aircraft acquired photographic and digital imagery. The photographic archive consists of photography acquired by the program from 1971 to April 1996. For information regarding photography and digital data (including areas of coverage, products, and product costs) contact EROS Data Center, Customer Services, Sioux Falls, South Dakota 57198 (Telephone: 605-594-6151).

As of April 1996 the EROS Data Center no longer receives an archive copy of newly acquired Airborne Science Program photography. Original photography is archived with the Airborne Sensor Facility at Ames Research Center, with the exception of Forest Service photography which as stated above is archived at the Remote Sensing Applications Center in Salt Lake City. A user copy of the photography is provided to the principal investigators for each flight. Principal investigators are cited on the first page of their respective flight summary reports. For information regarding photography acquired from April 1996 to the present contact the Airborne Sensor Facility as follows:

### **Flight Documentation and Data Archive Searches**

The following is the web site for flight documentation published by the Airborne Sensor Facility at NASA Ames Research Center:

<http://asapdata.arc.nasa.gov/er-2fsr.html>

Additional information regarding flight documentation to include data archive searches, data availability, sensor parameters, and areas of coverage may be obtained from the following:

Airborne Sensor Facility  
MS 240-6  
NASA Ames Research Center  
Moffett Field, CA 94035-1000  
Telephone: (650)604-6252 (FAX 4987)  
Website: <http://asapdata.arc.nasa.gov>

# CAMERA FLIGHT LINE DATA

## FLIGHT NO. 98-007-04

Accession # 05282

Sensor # 016

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Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MGL feet/meters	Cloud Cover/Remarks
		START	END		
A - B	0001-0009	19:17:04	19:21:42	32967/10048	Minor-30% cumulus (frames 0001-0008)
B - C	0010-0015	19:31:10	19:33:42	32933/10038	Minor cumulus (frames 0014-0015)
C	0016-0017	19:41:25	19:41:50	32850/10013	Minor cumulus
D - E	0018-0020	19:45:44	19:46:35	32933/10038	Clear; frost on camera window
F - G	0021-0028	19:54:58	19:58:23	32900/10028	Minor cumulus (frames 0021-0024); frost on camera window
H - I	0029-0031	20:05:49	20:06:51	32733/9977	Clear; frost on camera window; film transport without shutter function; no image (frame 0032)
G - F	0033-0041	22:34:10	22:38:27	33056/10075	10-40% cumulous
J - H	0042-0058	22:47:34	22:54:40	33018/10064	Minor cumulus (frames 0044-0048, 0058); 10-30% cirrus (frames 0051-0054)
K - L	0059-0080	23:02:52	23:13:28	33095/10087	Minor-20% cirrus and cumulus (frames 0059-0068)

# CAMERA FLIGHT LINE DATA

## FLIGHT NO. 98-007-04

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Check Points	Frame # Numbers	Time (GMT-hr, min, sec)		Altitude, MGL feet/meters	Cloud Cover/Remarks
		START	END		
M - N	0081-0094	23:30:48	23:33:51	33157/10106	Minor cumulus (frames 0091-0094)
O - P	0095-0105	23:40:53	23:45:16	33155/10106	10% cumulus (frames 0095-0102)
Q - R	0106-0115	23:52:33	23:55:48	33091/10086	Minor cumulus (frames 0106-0107, 0114-0115)
R	0116	23:55:48	—	11800/3597	30% cumulus; oblique frame
S - T	0117-0123	00:13:08	00:13:47	11800/3597	Clear; Juneau Airport; frost on camera window
T - U	0124-0128	00:14:29	00:15:31	11800/3597	Clear; Juneau; frost on camera window

# CAMERA FLIGHT LINE DATA

## FLIGHT NO. 98-007-04

Accession # 05283

Sensor # 017

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Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MGL feet/meters	Cloud Cover/Remarks
		START	END		
A - B	0001-0009	19:17:11	19:21:49	32967/10048	Minor-30% cumulus (frames 0001-0008)
B - C	0010-0015	19:31:17	19:33:49	32933/10038	Minor cumulus (frames 0014-0015)
C	0016-0017	19:41:32	19:41:57	32850/10013	Minor cumulus
D - E	0018-0020	19:45:51	19:46:42	32933/10038	Clear
F - G	0021-0028	19:55:05	19:58:30	32900/10028	Minor cumulus (frames 0021-0024); frost on camera window (frames 0023-0028)
H - I	0029-0031	20:05:56	20:06:58	32733/9977	Clear; camera window severely obscured by frost
G - F	0033-0041	22:34:15	22:38:32	33056/10075	Film advanced without shutter function -- no image (frame 0032); 10-40% cumulus
J - H	0042-0058	22:47:39	22:54:45	33018/10064	Minor cumulus (frames 0044-0048, 0058; 10-30% cirrus (frames 0051-0054)
K - L	0059-0080	23:02:57	23:13:33	33095/10087	Minor-20% cirrus and cumulus (frames 0059-0068)

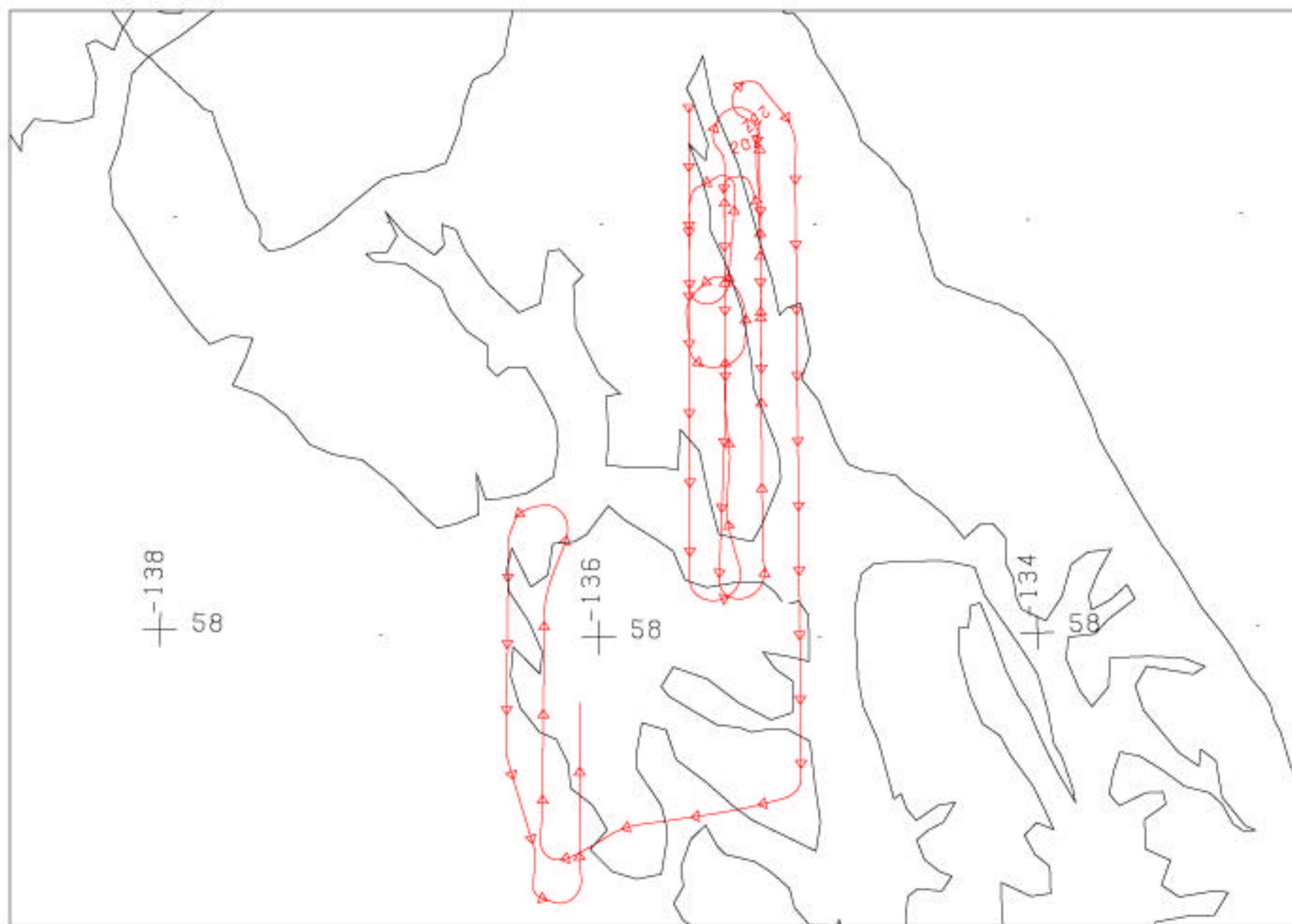
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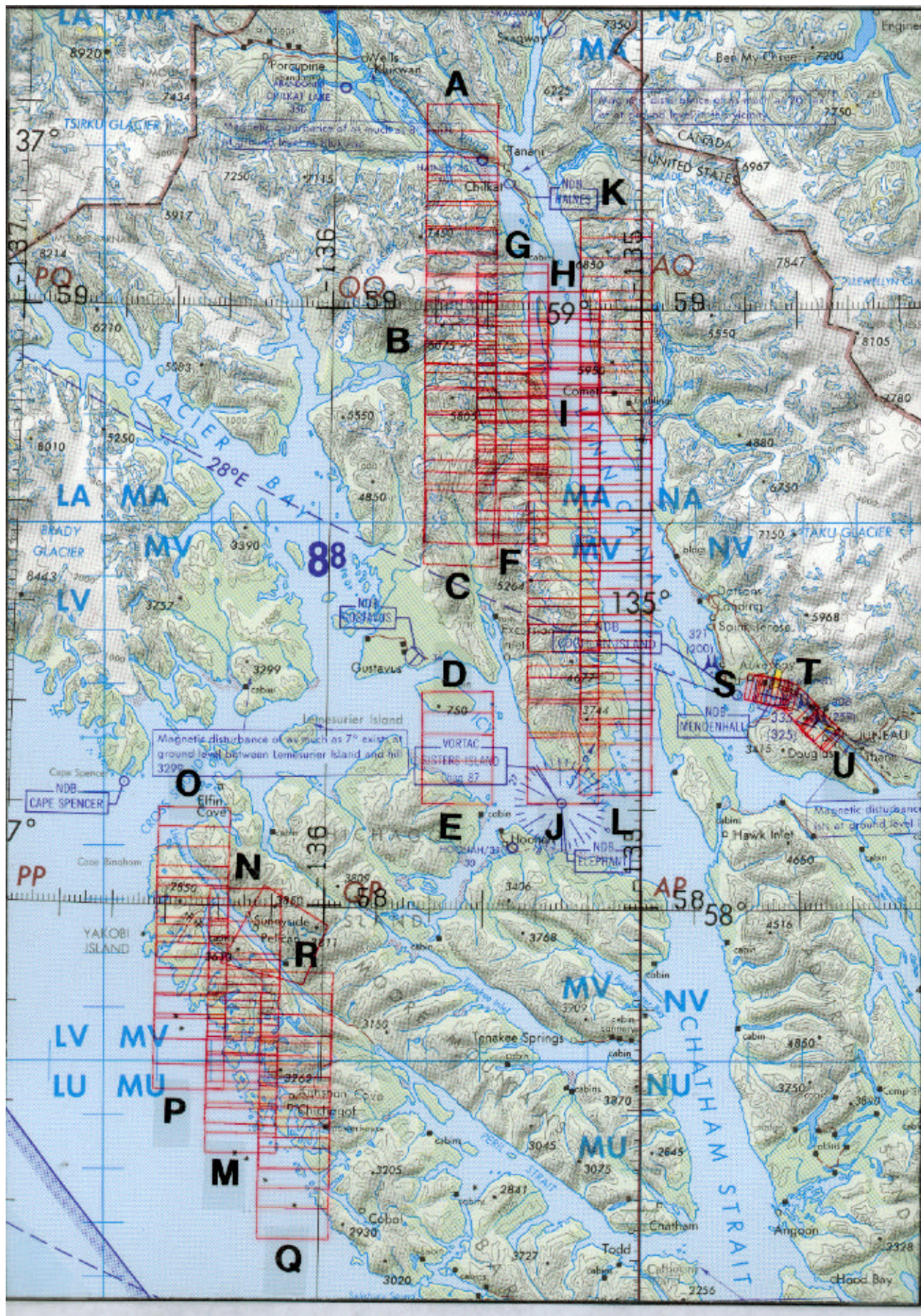
30-31 JULY 1998

A/C 799

(CESSNA CITATION)

DUAL RC-30





ONC D-12

DUAL RC-30

(CESSNA CITATION)

R/C 799

30-31 JULY 1998

FLIGHT 98-007-04